

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

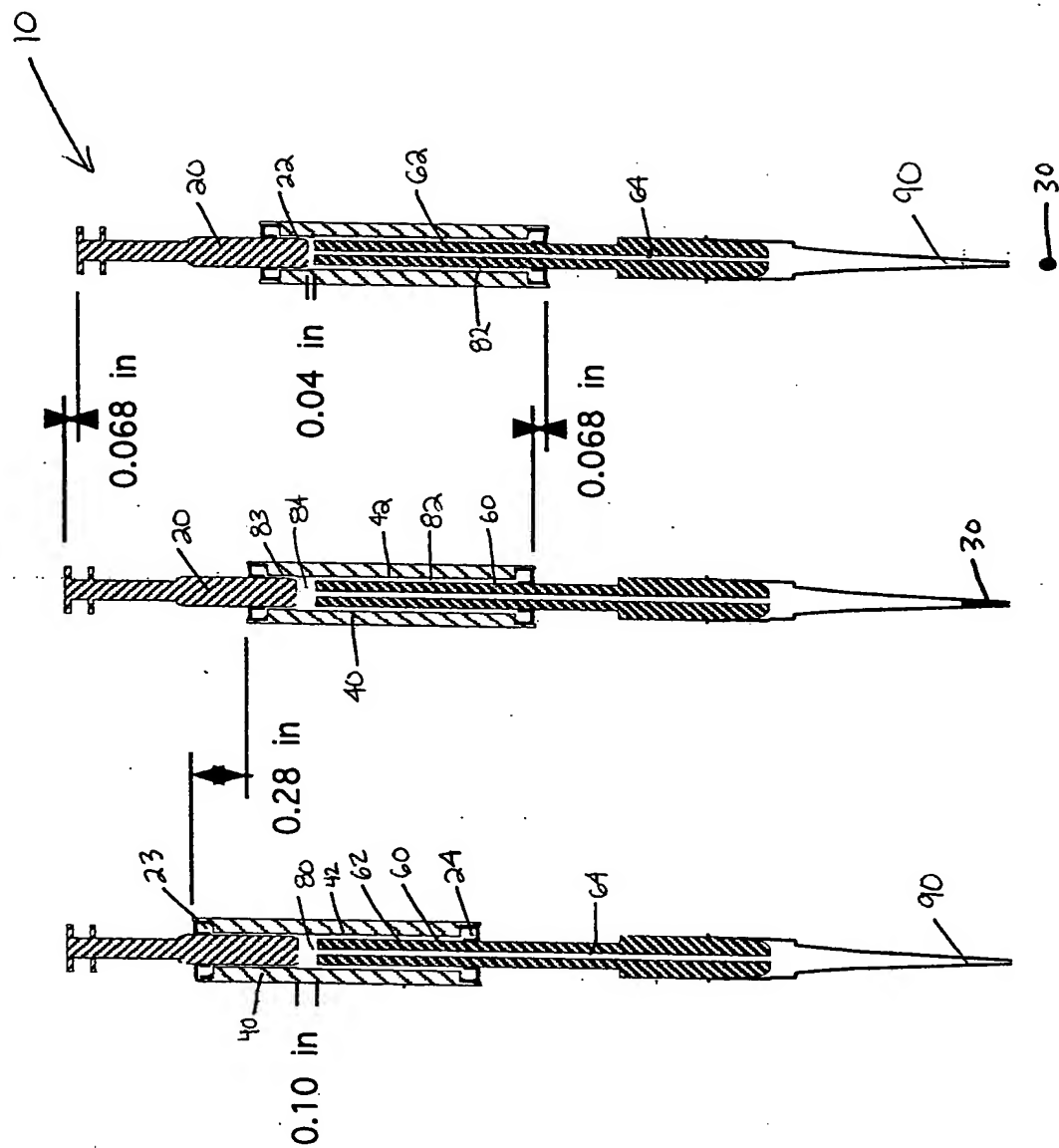


Fig. 1A

Fig. 1B

Fig. 1C

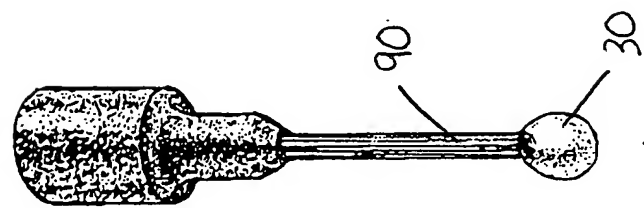


Fig. 2A

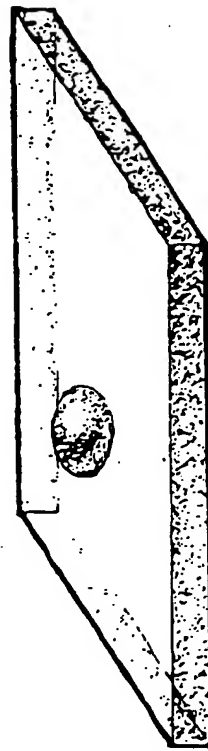
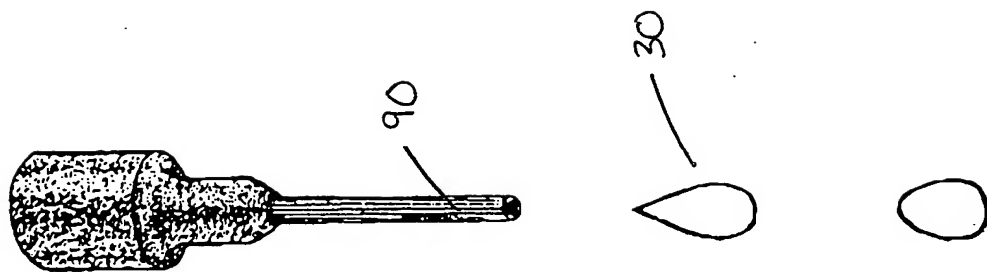


Fig. 2B

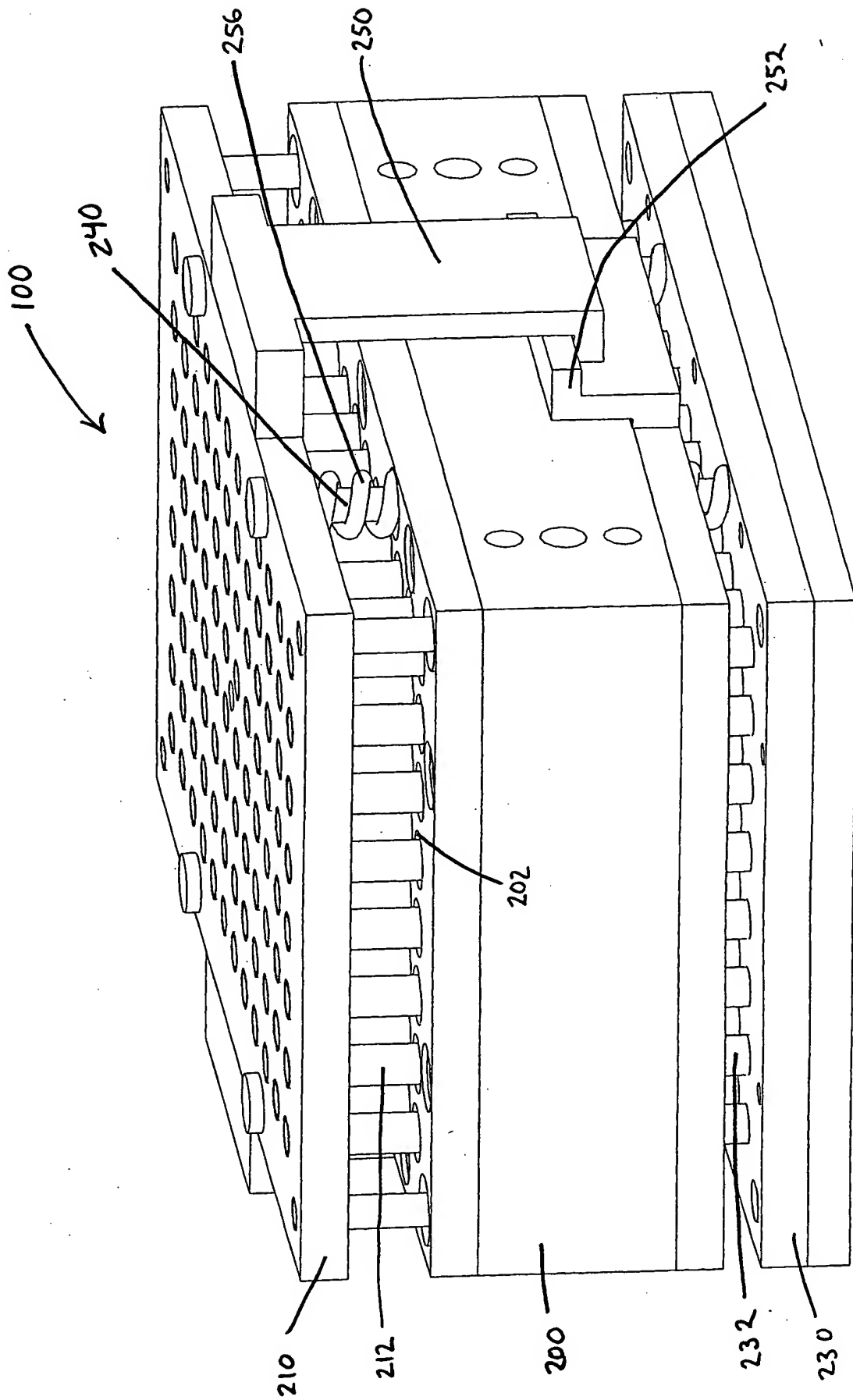


Fig. 3

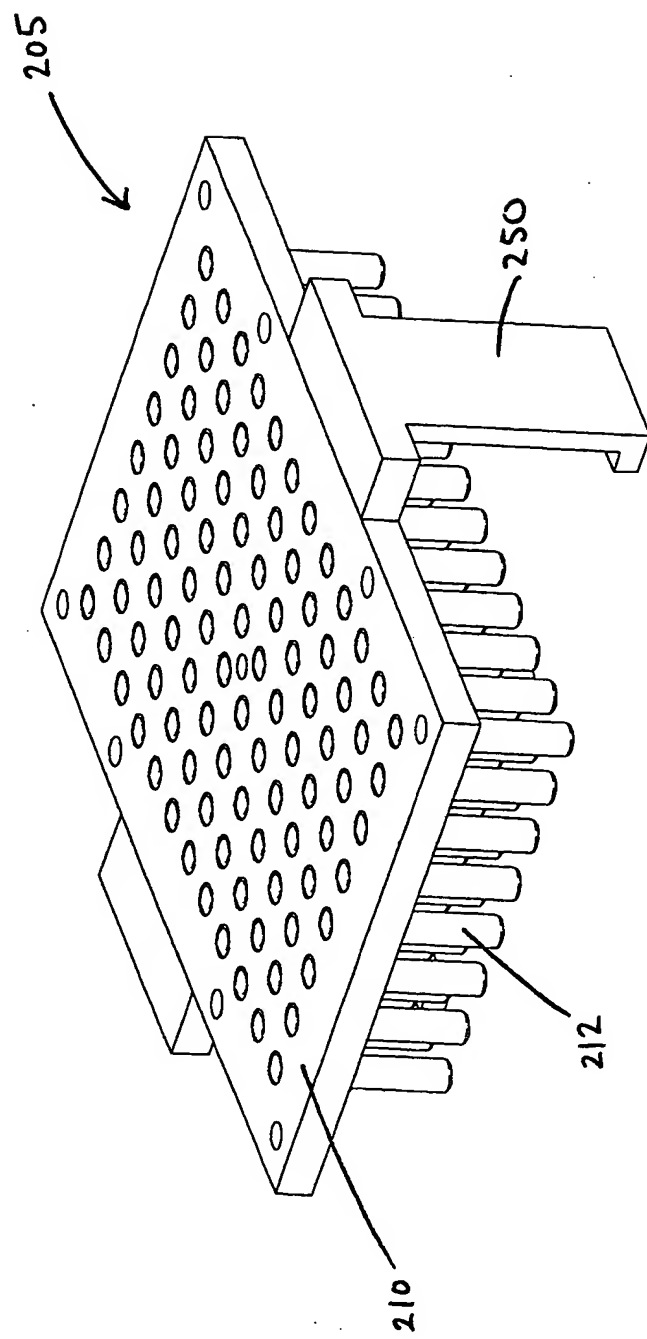


Fig. 3A

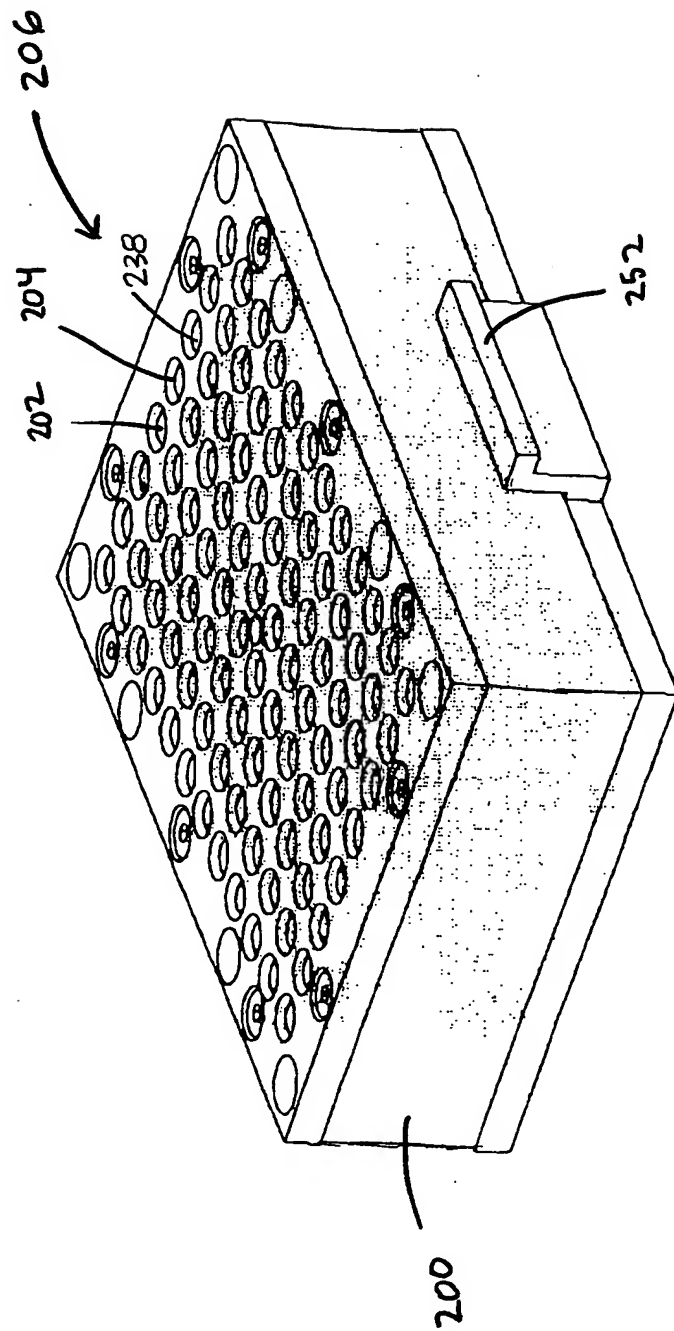


Fig. 3B

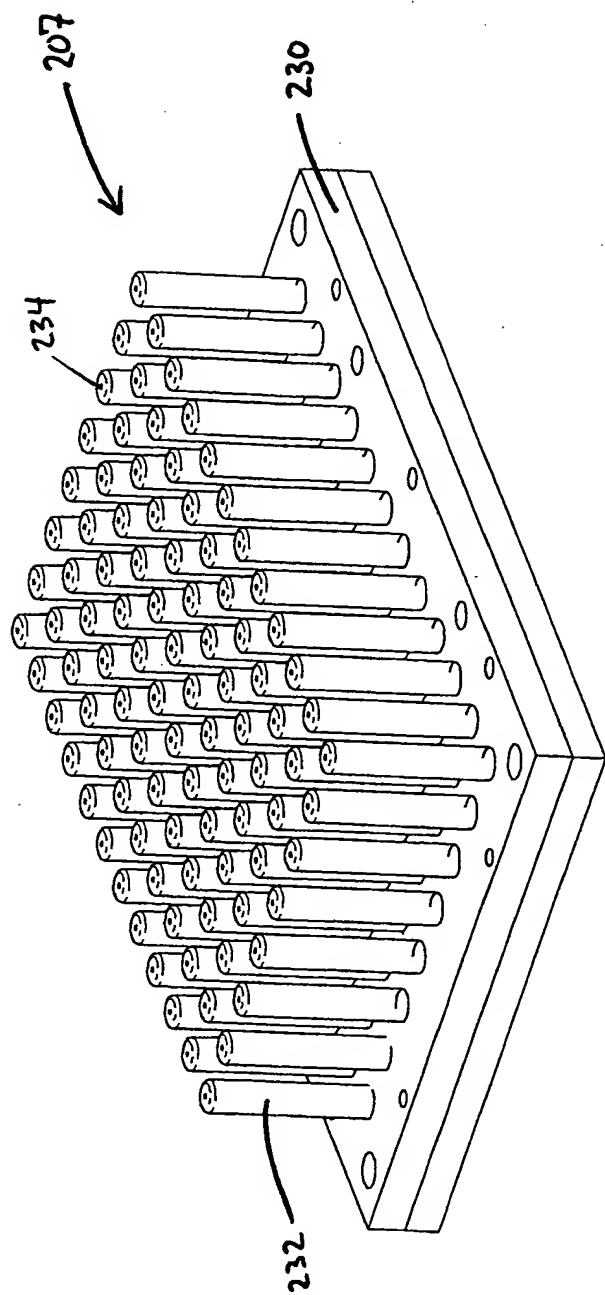


Fig. 3C

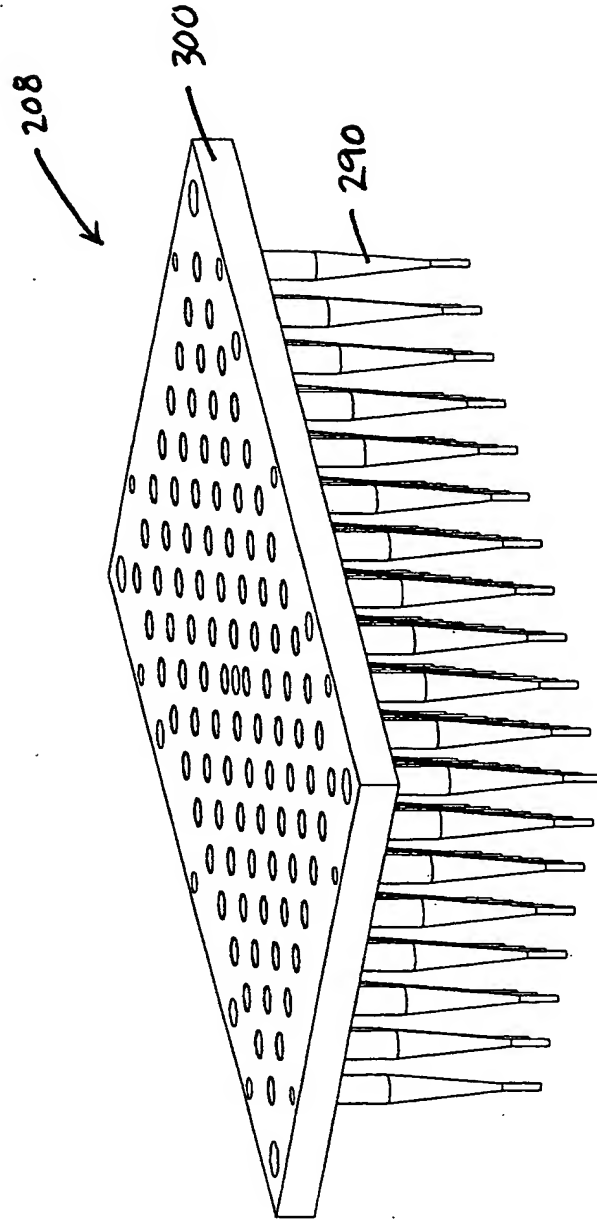


Fig. 3D



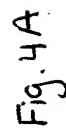
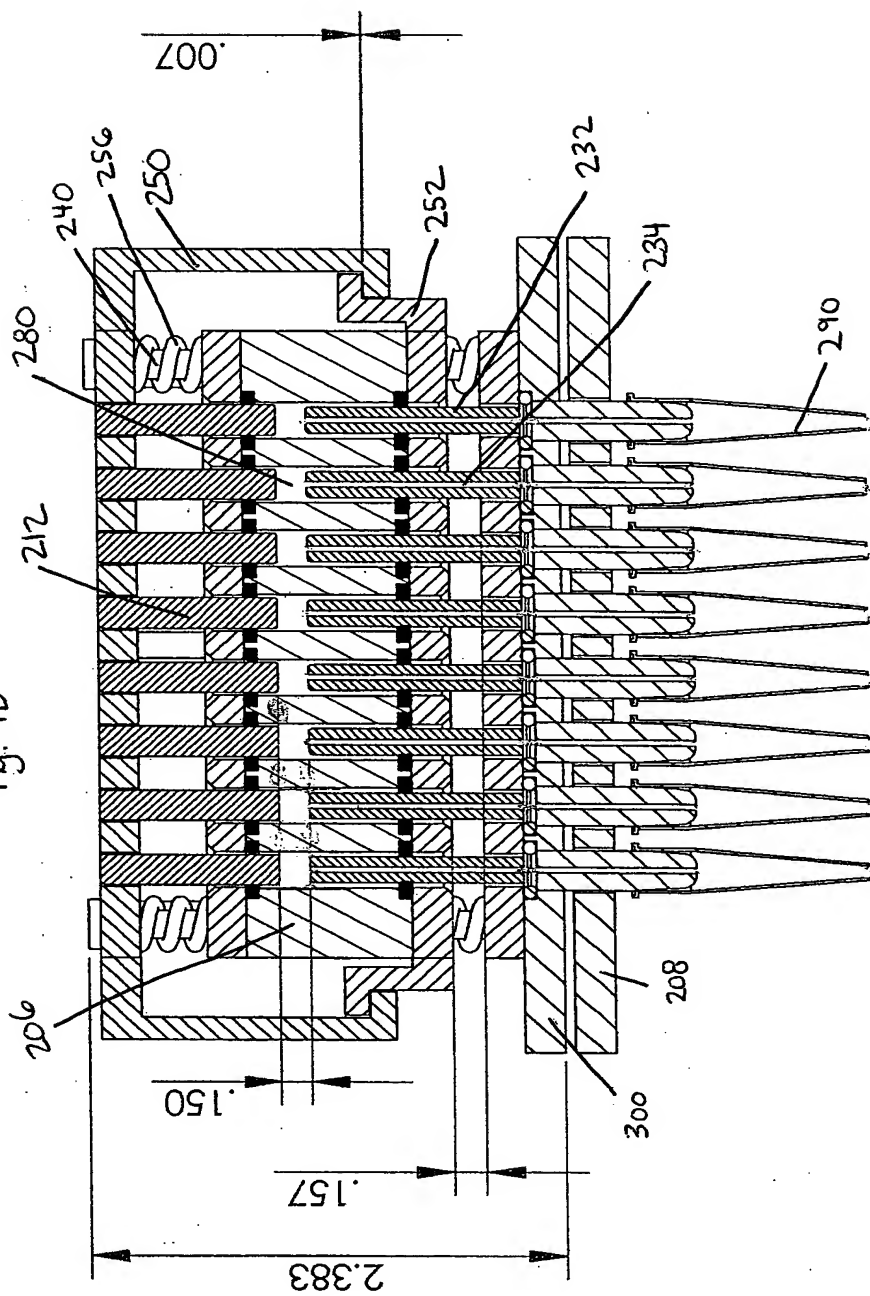


Fig. 4B



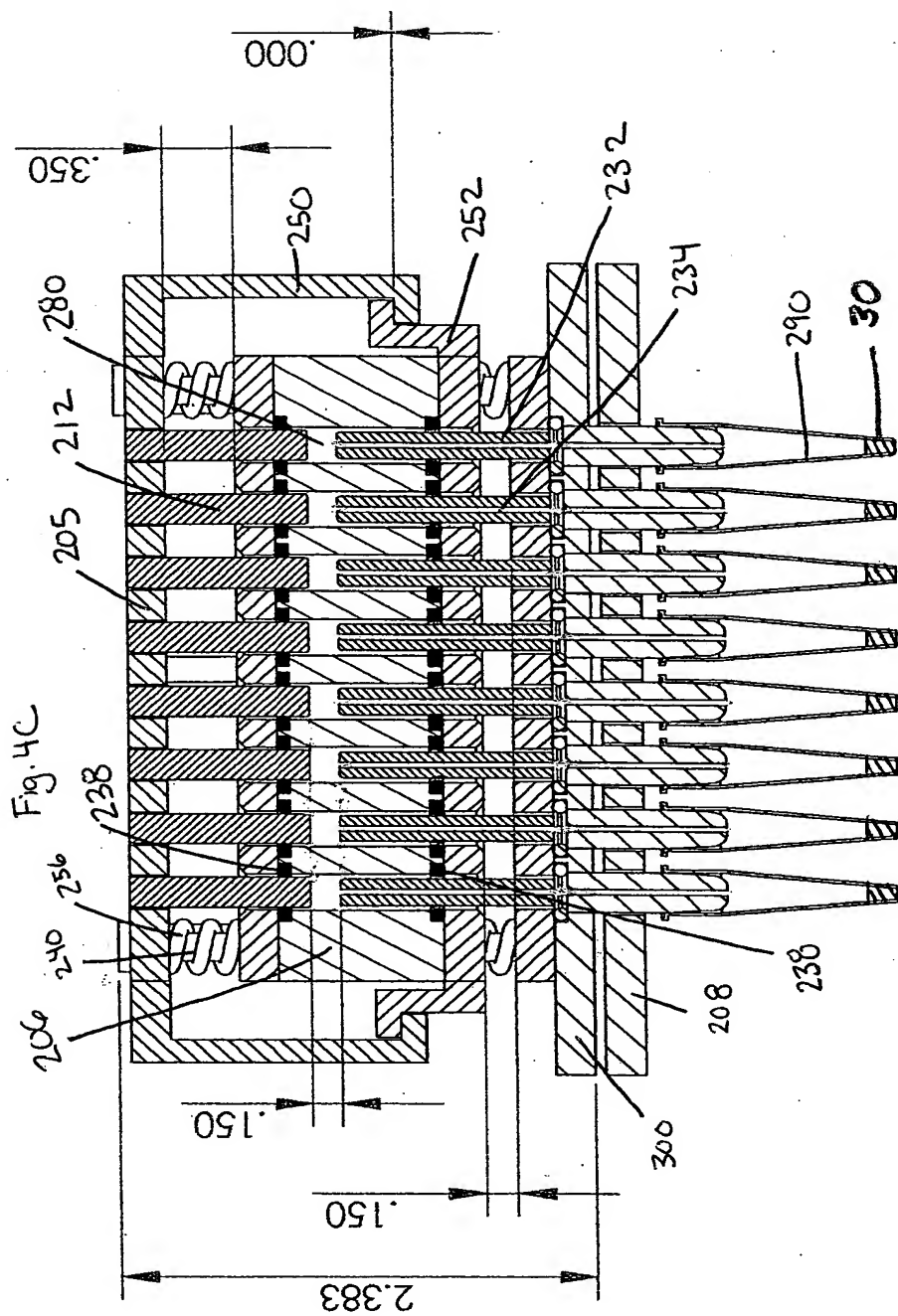
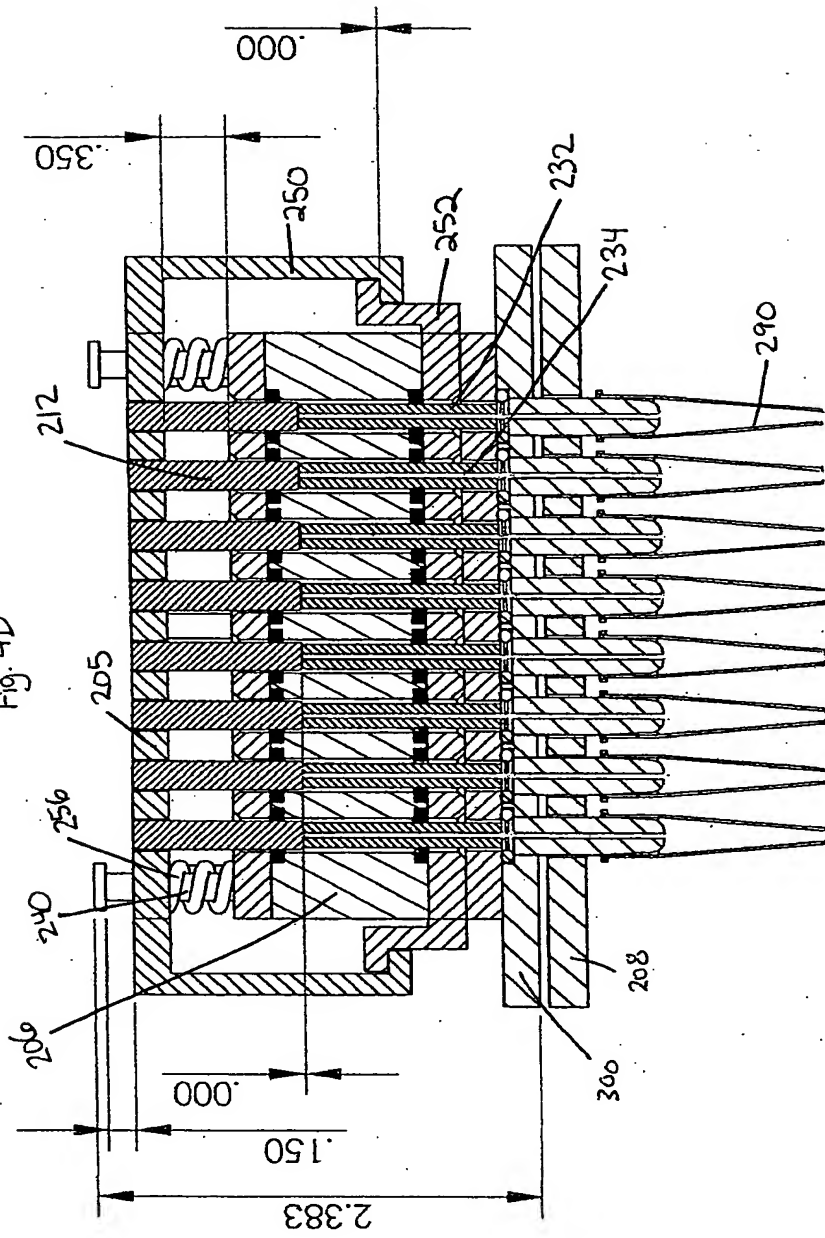


Fig. 4D



30

0

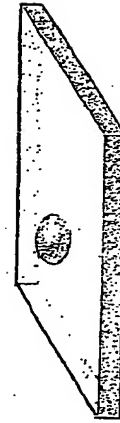












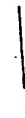






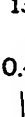






Figure 5.

Cross Section	Diameter (inches)	Cross Sectional Area (square inches)	Res (uL/inch)	Res (mm/uL)	Flow Max (uL/sec)	Maximum Tip Escape Velocity (meters/sec) for tip diameters (inches)			
						0.020	0.016	0.012	0.010
 <p>Hypothetical fine resolution conventional pipetter</p>	0.033	0.0009	14	1.8	20	0.10 	0.16 	0.29 	0.41 
 <p>Conventional pipetter</p>	0.062	0.003	50	0.51	69	0.4 	0.6 	1.0 	1.5 
 <p>Conventional pipetter</p>	0.125	0.0123	202	0.13	282	1.4 	2.3 	4 	6 
 <p>PRESENT INVENTION</p> <p>Bulk mode</p> <p>Differential mode (fine resolution)</p> <p>0.187"</p> <p>0.184"</p>	0.184	0.026	454	0.062	635	3 	5 	9 	13 
	0.033	0.0009	14	1.8	20	0.10 	0.16 	0.29 	0.41 

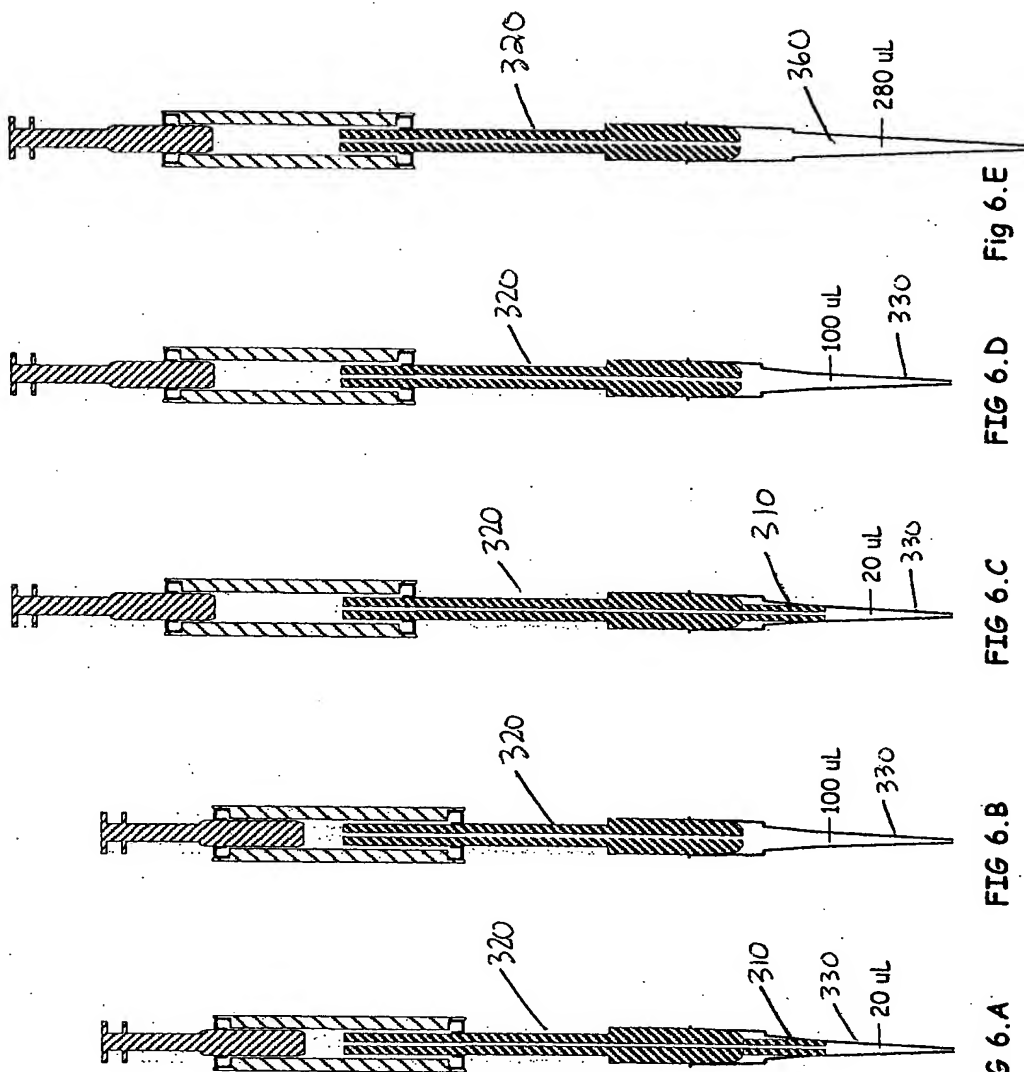


FIG 6.A

FIG 6.B

FIG 6.C

FIG 6.D

FIG 6.E

Total Dead Space	130 uL	210 uL	350 uL	430 uL	610 uL
Smallest volume sample (170 nanoliters)	0.17 uL	0.60 uL	1.5 uL	2 uL	2 uL
Largest volume sample	20 uL	50 uL	20 uL	50 uL	130 uL

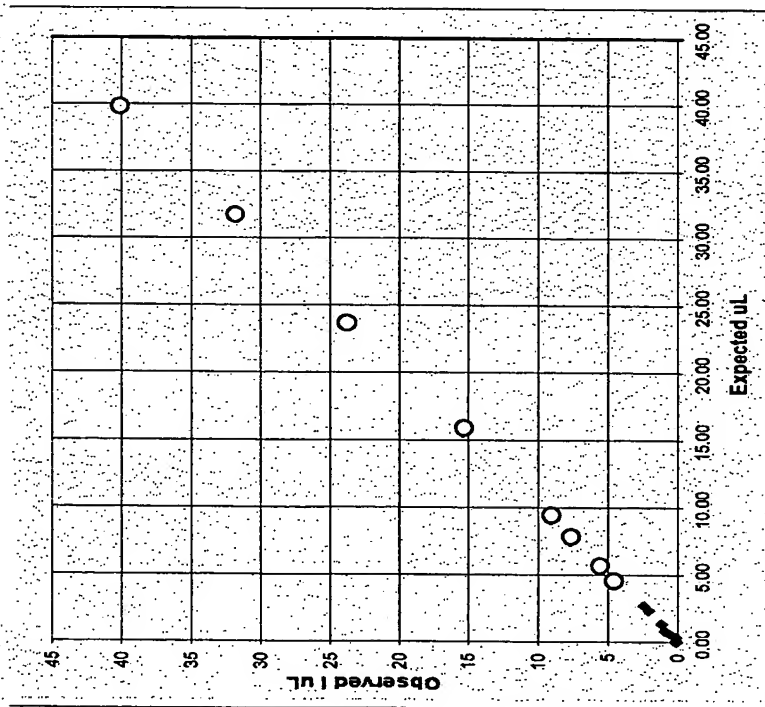
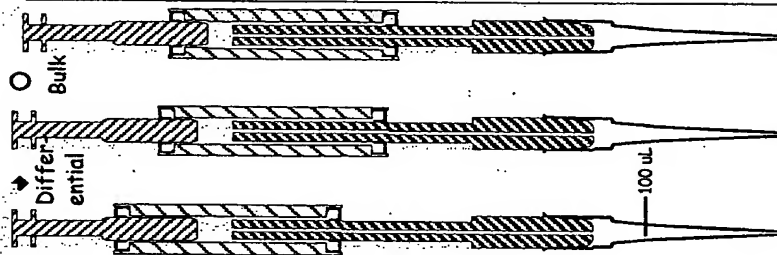


Fig. 7A



210 uL total  
internal dead  
space

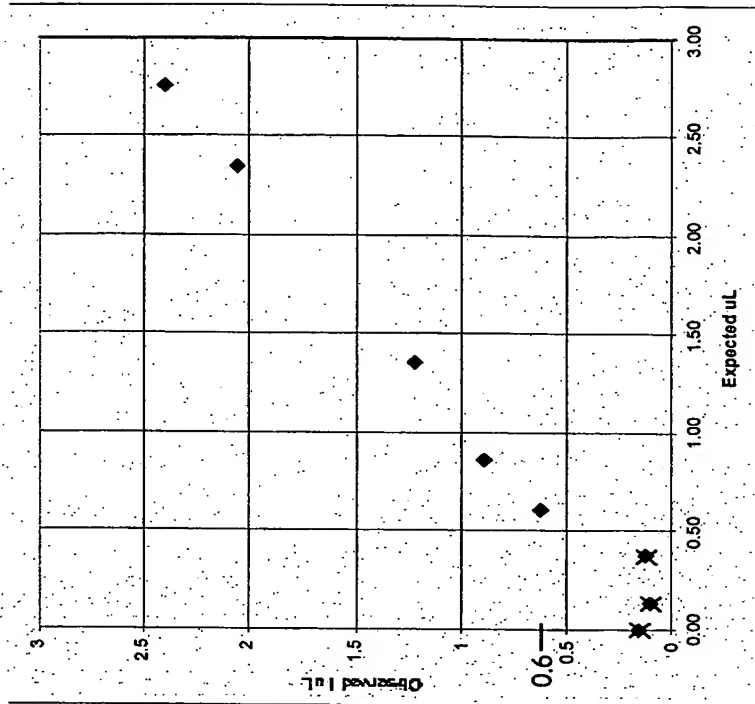


Fig. 7B

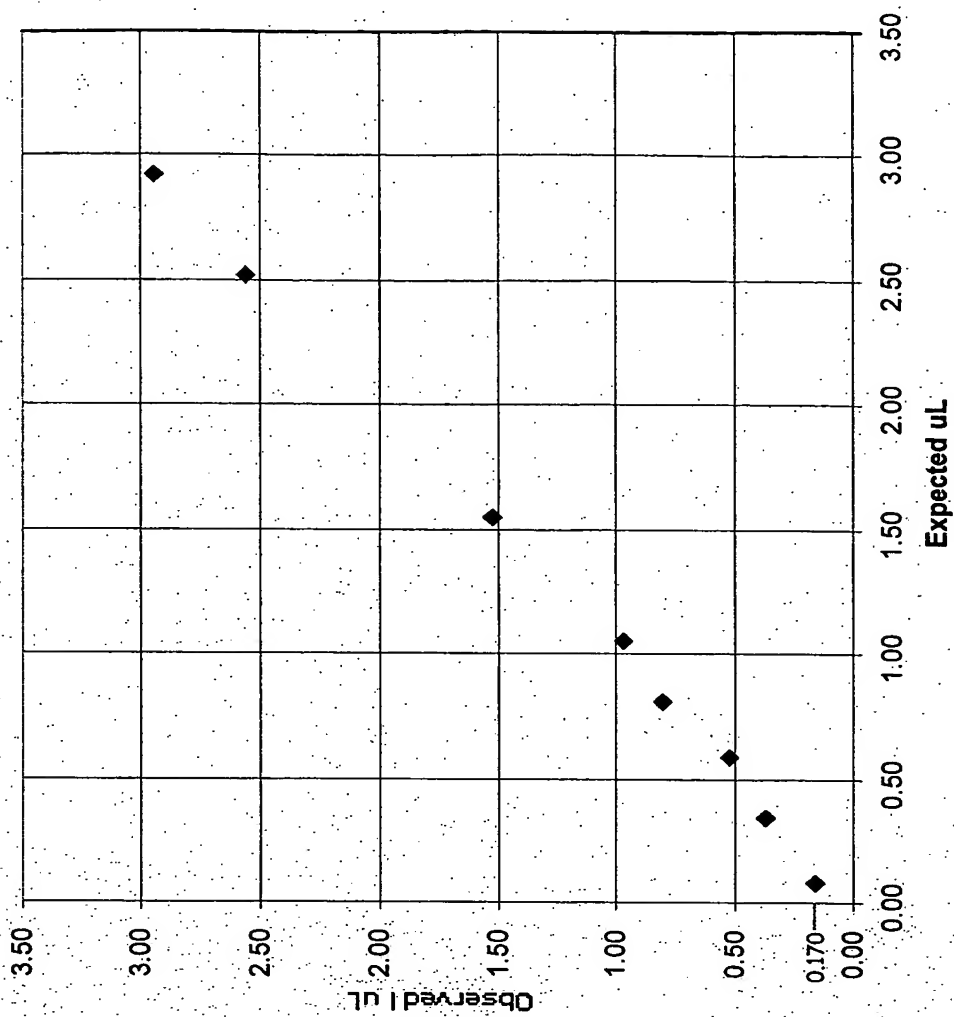
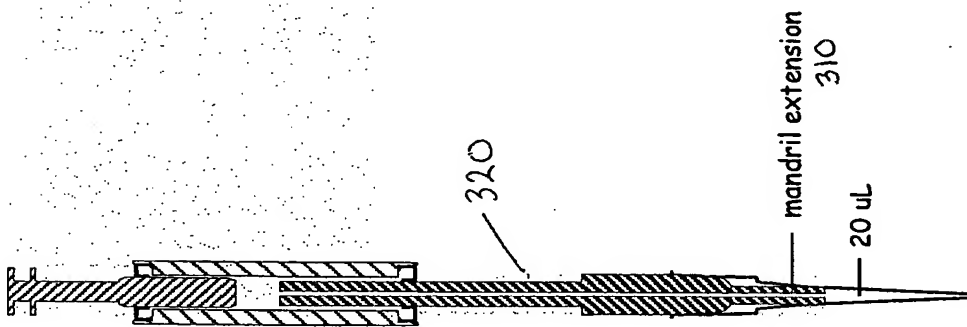
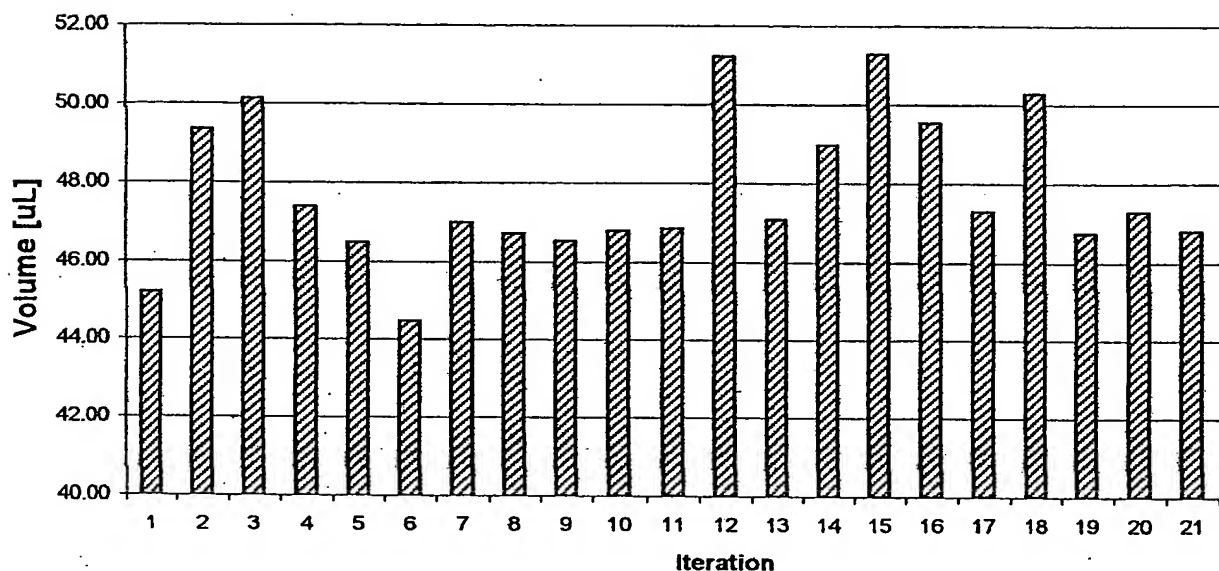


Fig. 8



FIG. 9

**Dispense Precision in DRD BULK MODE** *underwater*  
**in Large 5 mL (5,000 uL) Internal Air Space Pipette**  
**Standard Deviation 1.83 uL      CV 3.8%**



**Dispense Precision in DRD DIFFERENTIAL MODE** *underwater*  
**in Large 5 mL (5,000 uL) Internal Air Space Pipette**  
**Standard Deviation 0.21 uL      CV 0.4%**

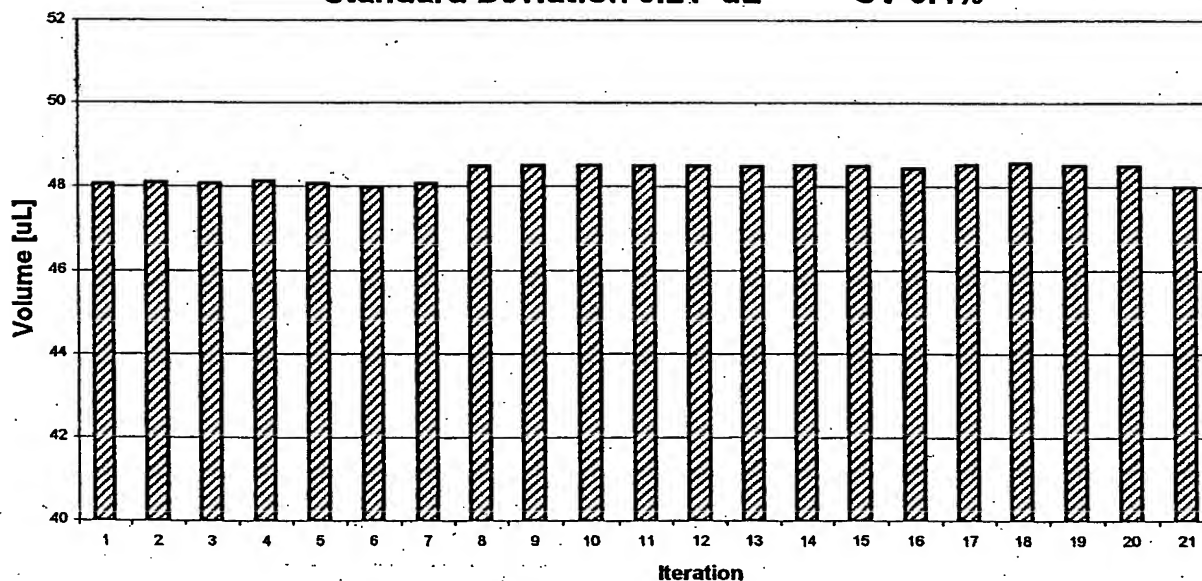


Fig.10

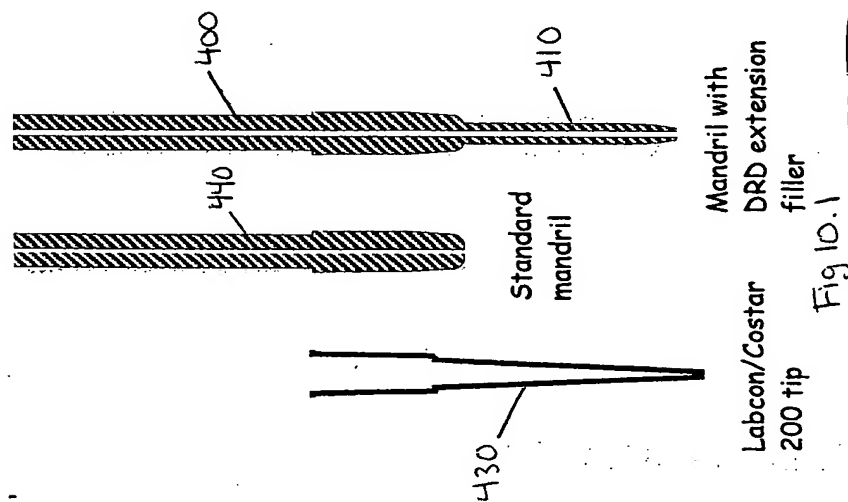


Fig 10.1

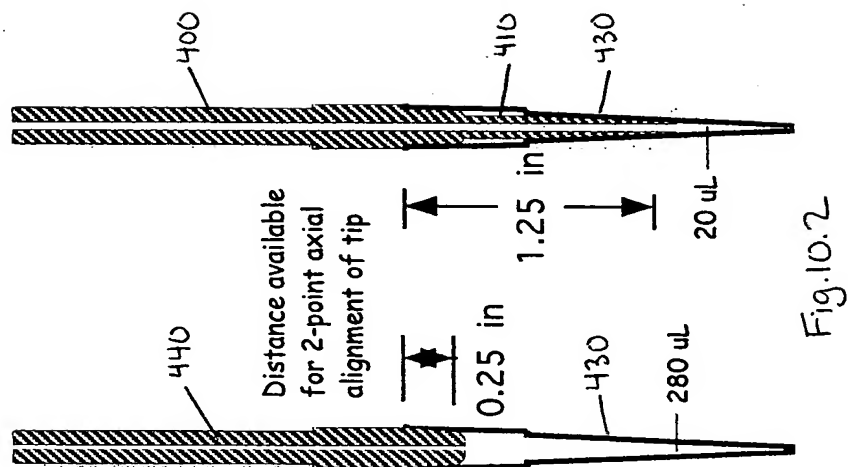


Fig.10.2

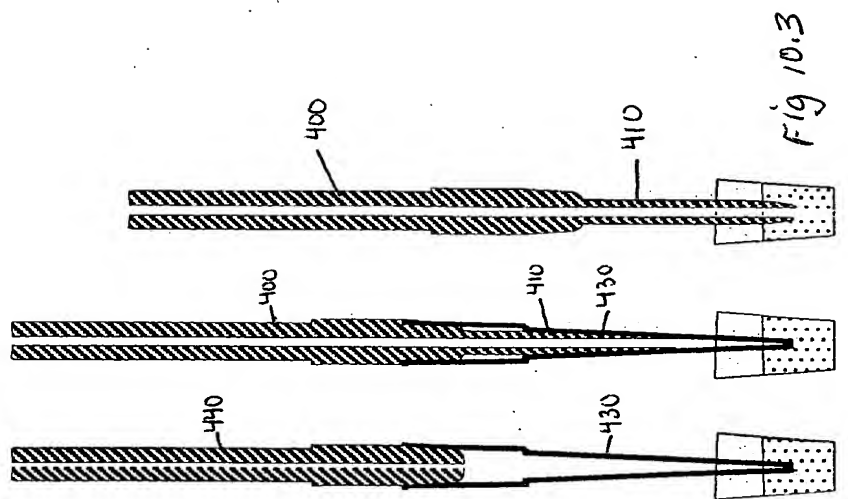


Fig 10.3

Fig. 11



Fig. 11.1



Fig. 11.2



Fig. 11.3



Fig. 11.4

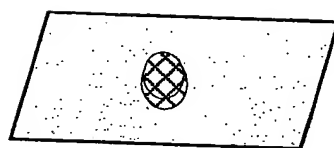


Fig. 12

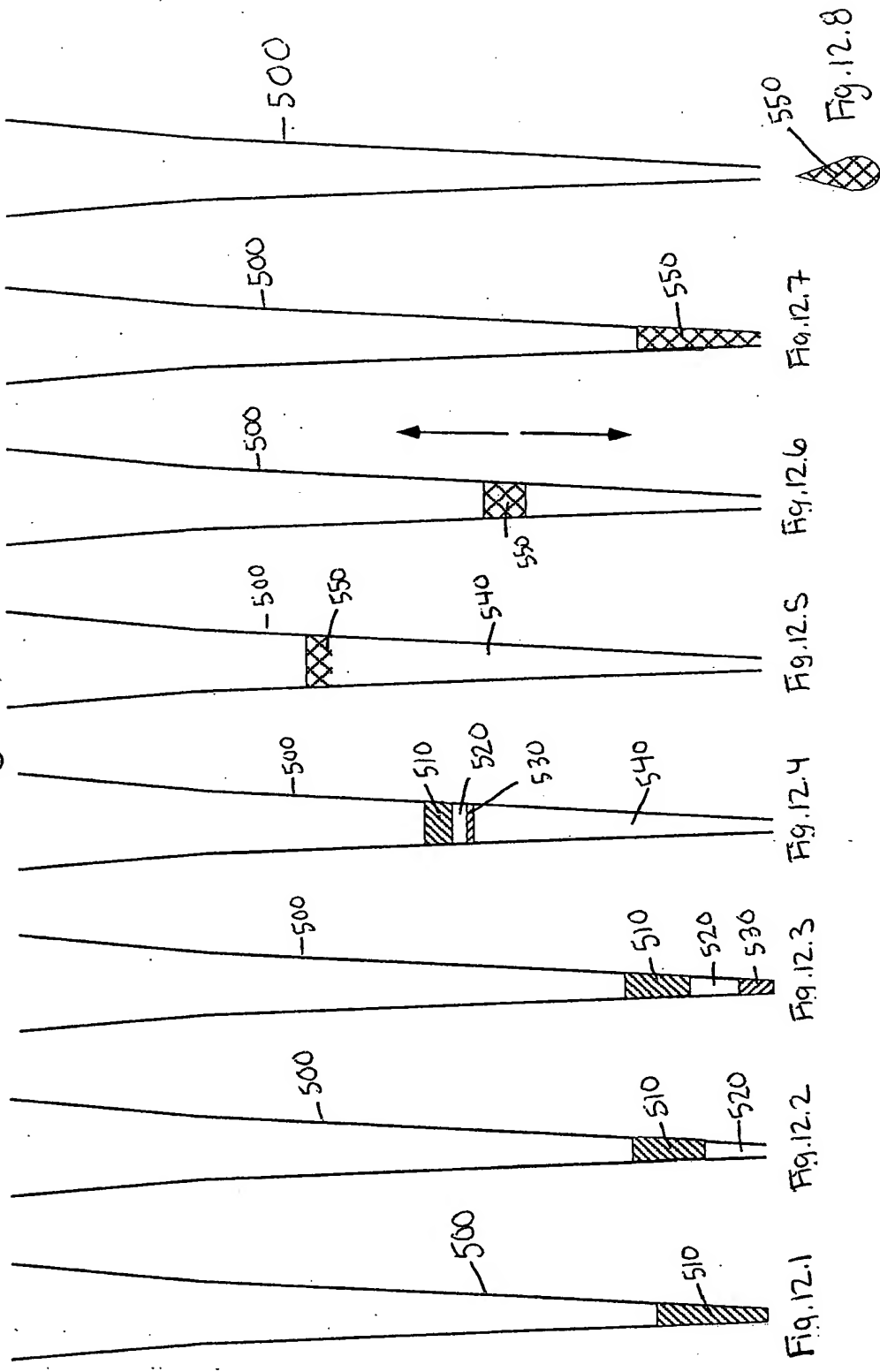


Fig. 13

